BULGARIA HEALTH REFORM PROJECT

Contract № PCE – I – 00 – 00 – 00014 – 00
Task Order 810

JANUARY 2005 MONTHLY REPORT

Prepared for:
USAID Bulgaria

Prepared by:

BearingPoint, Inc.
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Progress, Accomplishments, Issues and Events

General

- Bulgaria Health Reform Project had number of meetings with the chairman of the Association of the Voluntary Health Insurance Companies (VHIC) in Bulgaria to find out if they are facing any difficulties. BHRP proposed to the Private Health Insurance Association to co-organize a big symposium of the private health insurance in Bulgaria.
- BHRP exchanged correspondence with the Australian company that provided the grouper engine for the evaluation purposes of various DRG groupers for the case-mix office in NHIF.

Voluntary Health Insurance

- In the beginning of January BHRP invited the chairman of the Association of the Voluntary health Insurance funds Dr. Mimi Vitkova to discuss the progress of the private health insurance in Bulgaria. There is a need to promote that sector of health care after the number of the Private Health Insurance Funds increased to 12. The health project proposed in order of promoting to organize a symposium. That will serve as to introduce the current status of the private health insurance market; to draw the difficulties that the companies are facing; to show the successful stories of other transitioning and western EU countries; to stress the politicians attention on the problems and on the promotion of the private health insurance market. In order of the future EU accession Bulgaria needs to synchronize the legislation to EU directives.
  Mrs. Vitkova said that the decision makers are currently not interested of the difficulties that they are facing. She proposed to invite participants not only from the current government, but more important is to get representatives from all parliamentary presented political parties.
- The BHRP provides its' conference room for meetings of the association. In January two more new members were accepted – Zakrila and Nadezhda. All members agreed that the Health projects' idea would be beneficial for them.
- On separate meeting the BHRP discussed with Dr. Vitkova some topics of the agenda and who to contact to make the presentation on western European countries experience.
- The date of the symposium was set for April 27.

Inpatient Care Financing

- The BHRP purchased for evaluating purposes of the case-mix office a software grouper from TC Health - Australian company. After receiving the DRG grouper engine we found out that there are differences between the loaded versions of the procedures and diagnoses codes. The reason for that is because the Australians were using the ICD 9 CM (US modification) long time ago and mapped it to their ICD 10 AM before switching completely to the Australian codes. They only have old mapping version between those two procedure coding systems.

- BHRP was aware that Romania is using the Australian grouper and they can provide some of their work in order the Bulgarian case-mix office to prepare the required mapping table. The project contacted the Romanians and got for the case-mix office the procedure mapping. It had to be slightly modified and checked by a familiar with the Australian codes specialists. Following that, the project talked to Dr. Rosemary Roberts – the Director of the Australian National Center for Classification in Health. She accepted to verify the mapping table when its' done.

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FEBRUARY 2005 MONTHLY REPORT

Prepared for:
USAID Bulgaria

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USAID HEALTH PROJECT SUMMARY AND REPORT
Monthly Report No. 18

February, 2005

Project Title:	Bulgaria Health Reform Project (BHR)
Contractor:	BearingPoint, Inc.
Contract Number:	PCE-I-00-00-00014-00
Task Order:	810
Period of Performance:	April 30, 2003 – April 29, 2005
Project Manager:	Ibrahim Shehata

Progress, Accomplishments, Issues and Events

General

- BHR COP, Ibrahim Shehata, met with the Executive Director of the Bulgarian Business Leaders Forum (BBLF) to discuss possible presentation on the role of the private sector in insuring their workers through private health insurance funds. BBLF is considering organizing a conference on the topic and have some private insurance companies present on their benefits.
- I. Shehata met with Mary Jae Abbitt, COP for the USAID Open Government Initiative, and two of the project's team members, Eva Radeva and Kostadin Milev, to discuss possible assistance the BHRP can provide particularly with facilitating meetings with MOH counterparts. The MOH was selected as one of four ministries the Open Government Initiative was to train on establishing internal audits units.
- Ibrahim Shehata met with Dr. Mimi Vitkova to follow on plans for the proposed symposium on private health insurance. Shehata proposed ad draft agenda and possible presenters from transition countries. Dr. Vitkova agreed to contact the proposed speakers and get back to the Project with progress in two weeks.
- The Open Society contacted the BHRP regarding organizing a Forum on health sector reform in Bulgaria. They requested the BHRP present on the progress made by the Project and our vision for what still needs to be accomplished. The forum was held on 23 February and was attended by each of the leading political parties who presented their vision of the reform. Ibrahim Shehata gave an overview of the project and stressed the point that the health system needs to run more efficiently before more funds are pumped in it.
- BHRP COP met with Dr. Atanas Shterev, chairman of the parliamentary health commission, to discuss the impact of the national elections in June on the government's ability to implement reform. Shehata also briefed him that the NHIF case mix office is ready for the implementation of DRG in January 2006. Dr. Shterev made it clear that the government is unlikely to make any major decisions regarding hospital financing till after the election.

Hospital Restructuring

- A draft of the recommendations from the Razgrad region hospital assessment was presented to the MOH for comments. Below are some of the key recommendations in the report:

Recommendations pertaining to legislation and financing

1. **Develop various options for legal registration of municipal hospitals.** Create a legal opportunity for municipal hospitals to be registered not only as commercial entities but as not for profit organizations as well. This would enable them to apply more flexible financing and taxation schemes. Thus, hospitals would be encouraged to be more efficient and make a profit that could be reinvested.
2. **Change the designation of a MHAT**. The Health Care Institutions Act should provide that municipal hospital could register as general hospitals for active treatment. The requirement for minimal number of departments and beds should be dropped. It is advisable that beds in some municipal hospitals be used on a functional basis, as needed, depending on the influx of patients and their current health profile, i.e., no structured departments.
3. **Exert control over the referral pattern**. Put an end to the unlawful practice that the referral of patients to the Regional MHAT should be subject of an on site visit by the regional consultant. Extremely valuable time will be saved that way, especially in case of emergency.
4. **Implement modern hospital payment tools.** The legal and regulatory acts should stipulate the appropriate medical and financial incentives so that hospitals are encouraged to provide services that would meet the actual health needs of the population. In order to do so, all hospitals should be reimbursed using properly costed DRGs according to the quantity and quality of health care services provided while expenditures are monitored and managed. This approach would contribute to regulating admissions, controlling their appropriateness and distinguishing between the commitments of emergency, outpatient and inpatient care.
5. **Contract for the provision of certain health care services (CCPs/diagnostic groups) not only with hospitals but with individual specialists as well.** Contracts are to be concluded on the basis of medical licenses and certificates to use certain types of medical equipment. Thus, municipal hospitals could perform specialized services (e.g. in the area of ENT, eye diseases, urology, etc.) through subcontractors. Such arrangement would be especially convenient for the socially underprivileged population that would not have to travel in order to obtain specialized health care. On the other hand, it would be viewed as a reason for hospitals to start negotiating the procurement of equipment and lay the foundation of integrated inpatient care delivery.
6. **Develop a municipal health strategy**. Municipalities should adopt a detailed annual health and social strategy to meet the specific needs of the local population. Its financing should be allotted in the draft budget for the following

year. The strategy should be comprehensive and include the vision for local hospitals' development as well as: 1) define local health priorities, 2) create good conditions in order to attract a sufficient number of GPs and specialists needed to satisfy the region specific demands for health care, 3) establish and provide support to alternative health care facilities that correspond to the health and social needs of the population.

7. **Review the municipalities shared ownership of the Regional MHAT.** With regard to the elimination of the regional restriction to referrals and the free selection of hospitals, the rights and obligations of all municipalities in Razgrad region need to be reconsidered in view of their stake in the Regional MHAT. This process should be facilitated by the Governor and the Director of the RHC by involving the Regional MHAT's Board of Directors and the mayors. If necessary, the hospital ownership should be registered again so that it is shared between those municipalities that have expressed the willingness to support it.
8. **Update the legal requirements to infectious diseases departments.** The Regional Inspectorate's sanitation and hygiene requirements to infectious diseases should allow the possibility to set up makeshift infectious diseases sections that use borrow beds from other hospital departments.
9. **Introduce modern options for continuous training**. Regulate the development of alternative methods for post graduate studies and continuous training, e.g., 1) distant online training, 2) on-site seminars and lectures delivered by Medical Universities faculty members, 3) correspondence courses, etc., that require minimal leave of absence.
10. **Review the reimbursement of follow-up visits to ambulatory care**. The NHIF's payment scheme for follow-up visits to outpatient care specialists needs to be re-examined. The insufficient number of follow-up visits reimbursed is among the reasons for the growing admission rate of patients with acute and exacerbated chronic conditions that could be monitored in an outpatient care environment as well.
11. **Analysis of the reasons for reimbursements refused.** Hospitals should maintain statistics on the refused payment for CCPs and diagnostic groups as well as the reasons for that. Based on this information, the management team should analyze these data and adopt a strategy for quality improvement.
12. **Additional performance based financing for emergency care.** Develop a methodology for paying bonuses to the staff of emergency care units and departments accounting for personal contribution (number of visits, number of calls, procedures performed, etc.)

Recommendations regarding the organization and restructuring of health care delivery

- **The RHC, the RHIF, the Physician Union and hospital representatives should determine the volume and type of services the two main levels of inpatient care facilities (municipal and regional hospitals) are to provide.** An agreement must be reached regarding the differentiated levels of care each of

which will be obligated to perform certain services with a guaranteed quality. Such negotiations should aim to: 1) ensure equal access of the population to high quality health care, 2) limit unfair competition between the regional and municipal hospitals and 3) enable health care facilities to implement a viable investment program based on the health needs of the population. A clear designation of various hospital levels' mission and services would facilitate emergency care by shortcutting access to specialized care.

- **Integrated delivery of inpatient care.** Along with the RHC, the RHIF and the Physician Union, hospitals should regularly negotiate the way to integrate their services in order to achieve maximum utilization of specialized equipment and maintaining the level of expertise of medical personnel who uses it. Hospitals should shift their priorities from competing with each other to meeting the health needs of the population. By conducting regular negotiations, they should agree in which areas they could specialize and gradually move towards integrated delivery of inpatient care.
- **Build a national integrated information system** that integrates the statistical information required by the MoH, the NHIF, hospitals and research institutions. This information should be submitted by all providers (GPs, outpatient care practices, hospitals, etc.). It will provide an opportunity to: 1) trace the movement of patients through ambulatory and inpatient care using their ID numbers; monitor utilization and quality; 2) improve the collection rate and quality of data on morbidity, the influx of patients and other quantitative indicators; 3) make medical and social analyses that will serve as the basis for health planning. The first step is the introduction of a methodology for joint control over health care institutions exercised by the NHIF and the MoH.
- **Create conditions for independent medical auditing.** Its purpose is to: 1) monitor quality of outpatient and inpatient care in accordance with the rules of good medical practice and WHO requirements, 2) monitor admission indications. The existence of such body will be feasible and effective only if there is a unified information system in place.
- **Develop unified accounting forms** for each type of health care institution that reflect their designation as commercial entities and the mission imposed to them by the state.

Ambulatory care

- **Set up specialized consultation offices for well child care and for pregnant women with diagnostic, curative and educational purposes** by municipality, especially in places with concentrated minority groups. They would contribute to decreasing child morbidity and mortality, complicated pregnancy and post-delivery period. Family planning programs should become a priority. Also, health education of the minorities will be facilitated, if it is carried out by trainees that originate from the municipalities.
- **Establish legislative and procedural possibility for ambulatory care specialists to conclude contracts with the hospital for using equipment and**

admitting patients. This approach will favor municipal hospitals in particular, as they have been finding it difficult to attract renowned specialists despite the fact that they have specialized medical equipment. Mechanisms for separate reimbursement of ambulatory care specialists that performed the procedure in the hospital and of the latter for the space, equipment and staff allocated. See item 5 of the Recommendations regarding legislation and financing.

- **In view of maintaining accurate statistics on general morbidity** it is necessary that the RHC collect data on all outpatient care providers and analyze them along with hospital data. This information will serve as grounds for strategic decisions on the health sector organization and the development of specific services that correspond to the health profile of the population.
- **Improve the payment scheme for reimbursing the primary care provided to rural and/or minority population** or to remote and inaccessible areas. It will be reasonable to introduce adequate risk adjustment correctors in order to attract GPs and ensure access to primary and urgent health care.
- **Provide for appropriate and effective control over GPs and specialists' contractual obligations by the RHC and the RHIF**: 1) exercise strict monitoring or urgent care to be provided by GPs, 2) conduct regular control over the availability of nurses and physicians in large GP practices (especially if there is only one GP in several service areas), 3) make sure that patients receive all the procedures they require.
- **Disability Certification Commissions should be granted the status of independent outpatient care units** (separate from hospitals) with designated financing. Options include the Ministry of Labor and Social Policy, the NSSI or another government agency/ministry.

Inpatient Care Financing

- Due to the differences between the loaded versions of the procedures and diagnoses codes and the Australian grouper, a mapping between the different versions of the classification systems is necessary. This is due to Australia using the ICD-9-CM (US modification) long time ago and mapped it to their ICD-10-AM before switching completely to the Australian codes. They only have old mapping version between those two procedure coding systems.
- BHRP worked with the case mix office at the NHIF and the Australian National Center for Classification in Health (NCCH) on mapping the ICD-9-CM to the ICD-10-AM. This process required developing mapping software in order to map over 3,500 procedures. This required creating links from the ICD-9 codes to ICD-10-AM codes using the NCCH mapping tables. This has been a complete electronic map. A summary of the results is attached.
- In summary, the NCCH and the NHIF's agree on maps for 87% of the cases (i.e. 3121/3621). NCCH also provided map results for 311 cases (i.e. 264+47) where the NHIF map field was blank. Review of maps is required for 66 cases where

maps differed and 123 cases where the ICD-9-CM code was not in NCCH mapping tables.

ATTACHEMENT-1

Comparision of Case Mix Office (NHIF) ICD-9-CM to ICD-10-AM Maps to maps in NCCH Mapping tables

	Compare maps - Agree (Y / N)		
Compare category	N	Y	Grand Total
N - Map provided	264		264
N - Map provided (no map)	47		47
N - Maps differ	66		66
N - Not Aust Code	123		123
Y - Agee no map		93	93
Y - Map equal		3028	3028
Grand Total	500	3121	3621

Definitions of "Compare Categories"

N - Map provided = Drs map field was blank and NCCH has provided a map
N - Map provided (no map) = Drs map field was blank and NCCH has confirmed there is 'no map'
N - Maps differ = Drs map and NCCH map differs
N - Not Aust Code = The ICD-9-CM code did not appear in the NCCH map table because it was not in the Aust Version of ICD-9-CM
Y - Agee no map = Drs and NCCH agree there is 'no map'
Y - Map equal = Drs map and NCCH map are the same

In summary

NCCH and the Drs agree on maps for 87% of cases (ie 3121/3621)
NCCH as provided map results for 311 cases (ie 264+47) where the Drs map field was blank
Review of maps is required for 66 cases where maps differed and 123 cases where the ICD-9-CM code was not in NCCH mapping tables.

Some notes

This was a complete machine matching exercise.
The ICD-9-CM to ICD-10-AM 3rd edition map is created via a crosswalk from ICD-9-CM to ICD-10-AM 1st Edn, to ICD-10-AM 1st Edn to ICD-10-AM 2st Edn, to ICD-10-AM 2nd Edn to ICD-10-AM 3rd Edn
This NCCH maps provided are the logical maps (ie those maps for DRGs), rather than the historical map, in the NCCH mapping tables.

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MARCH 2005 MONTHLY REPORT

Prepared for:
USAID Bulgaria

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USAID HEALTH PROJECT SUMMARY AND REPORT

Monthly Report No. 19

March, 2005

Project Title:	Bulgaria Health Reform Project (BHR)
Contractor:	BearingPoint, Inc.
Contract Number:	PCE-I-00-00-00014-00
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Period of Performance:	April 30, 2003 – April 29, 2005
Project Manager:	Ibrahim Shehata

Progress, Accomplishments, Issues and Events

General

- BHRP COP attended a meeting at USAID on the Global development Alliances (GDA). The presention explained what GDA are, how they work and how USAID partners can apply for them.
- The Bulgarian Business Leaders Forum (BBLF) held a one-day conference on the role of private health insurance. The conference was cosponsored by BHRP. Ibrahim Shehata made a presentation on the role of private health insurance in the US and EU countries. The conference was attended by Bulgarian private firms, private health insurance companies and some members of the parliamentary health commission.
- As a follow up on the possibility of hosting a symposium on the role of private health insurance in Bulgaria, BHRP COP met with the chairwomen of the Association of Private Health Insurance Companies, Dr. Vitkova, to assess progress made in contacting possible presenters. Dr. Vitkova said that she contacted some of her EU colleagues but has not heard anything back yet. Ibrahim Shehatta then volunteered that would directly contact potential speakers particularly at the WHO and the European Observatory. He is waiting for a reply by the end of the beginning of April. If it was impossible to secure potential high quality speakers, he suggested that the symposium be either postponed or cancelled. Dr. Vitkova agreed to meet again at beginning of April to make a final decision.
- BHRP hospital financing technical expert, Ms. Jugna Shah arrived for a TDY in Bulgaria between March 16-26. The purpose of this trip is to assist with revising the mapping tables for the procedure and diagnosis codes and assist with preparing the relative weights tables for the pilot hospitals. Ms. Shah is expected to meet with officials from the MOH and the NHIF during her stay.

Hospital Financing

- During Ms. Shah's visit and BHRP COP visited with the Deputy Minister of Health, Dr. Petko Salshev, the director of the NHIF, Dr. Ivan Bukarev, the president of the Physian Union, Dr. Kehayov and team members of the Case Mix Office at the NHIF.
- During the meeting with Dr. Salchev the deputy minister started the meeting by stating that a decision should be taken to implement a DRG-based financing for all Bulgarian hospitals in 2006. Dr. Salchev also indicated that full financing of hospitals will occur solely through the NHIF in 2006 and that DRGs should be the method for financing all hospitals not only the pilot hospitals who have submitted data to date. He agreed that the policies guiding the implementation should take into account that this will be the first year of a new financing system and therefore risk to the hospitals and the government needs to be minimized and balanced.
- Dr. Salchev also stressed that all technical aspects of the DRG-based financing system need to be ready no later than May 25th, 2005. This information should be presented by the NHIF to the Managing Board of the NHIF. The Managing Board should accept the DRG-based financing system as the method of financing all hospital care purchased by the Fund in 2006. Dr. Salchev's premise is that once the Managing Board of the Fund accepts DRGs as the method of financing for 2006 then it can be recommended to the current Parliament. In all likelihood the current Parliament will accept the method, which will make it easier to bring this to the new Parliament. This is Dr. Salchev's opinion.
- We discussed the following key technical issues that require some decision-making prior to simulating case-mix based budgets:

1. Bulgarian relative weights based on data from the pilot hospitals
    - Relative weights - a factor that expresses the resource use/cost of one DRG compared to another. This ratio is calculated for each DRG based on the patient level clinical and cost data if available.
        i. The Case-Mix office has one year of this data for the 30 pilot hospitals. Each patient in the database needs to be assigned a DRG group and then the costs aggregated in order to calculate the average cost for one DRG vs. the average cost for all DRGs.
        ii. Once the data is grouped into DRGs, the Case-Mix office can calculate relative weights. This should be done by the middle of April (?)
2. Development of policy options such as the base rate/base price, risk corridor, adjustment factors, and an outlier policy
    - Base rate/base price (national, hospital, and peer group) – the base rate is the same as a base price which should represent the average cost for the average case with a relative weight of 1.0. Selecting the base rate is

critical and depends on a number of factors. If the NHIF believes it is reasonable to have the same base rate for all of the hospitals yet does not want to begin with that due to the system being new, then it can transition hospitals from their own hospital rate or a peer group rate to the national rate over time. If the national base rate is not used at the beginning of implementation, then the NHIF must decide whether to use a hospital rate or a peer group rate, or some sort of blending mechanism. If the hospital or the peer group rate is blended with the national rate, then blending percentages must be selected to migrate hospitals over time to a single base rate. Dr. Salchev recommended using peer group base rates blended with the national rate over a period of time. For example:

    a. 2006: 70% peer group base rate + 30% national base rate
    b. 2007: 50% peer group base rate + 50% national base rate
    c. 2008: 30% peer group base rate + 70% national base rate
    d. 2009: 100% national base rate

- In order to calculate this, the case-mix office of the NHIF will need the total hospital (inpatient) budget for all of the hospitals in aggregate as well as by hospital.
- Risk corridor - sets an upper and lower limit on how much money the hospital can gain or lose under the new financing system each quarter/year etc. This is useful to implement to minimize the risk to the hospital and the government when a new financing system is being implemented, particularly when historical data from individual hospitals or peer group hospitals is being used. A certain % of the overall budget available for hospital financing must be held back to allow for extra payments to be made through the risk corridor.
    i. The NHIF needs to decide if it will use a risk corridor, how often the projected budget vs. the actual experience of the hospital (in terms of case-mix which takes into account volume increase or decreases, coding changes, and types of patients) will be compared. In other words, how often will the NHIF make the calculations (i.e., quarterly, annually etc.)?
    ii. The Case-Mix office should consider modeling two options:
        a. +/- 5% risk corridor
        b. +/- 10% risk corridor
- Outliers – the concept is that some extra payment can be made to hospitals for cases that have unusually high or low lengths of stay or costs due to factors outside of the hospital's control (i.e., patients who are discharged quickly because they are less sick than the average or those that are very sick and who require extra services/resources). Different decisions can be taken for the outlier policy including not even having an outlier policy, though this is something that is often politically important to have.
    i. Dr. Salchev does not believe an outlier policy is needed but agreed that it is hard to take this decision without first seeing the peer group data and the average length of stay by DRG along with the

minimum and maximum days stayed. This data will be available to review and then a decision can be taken to pay for outliers.

- Adjustment factor for type of hospital – this is a factor or a multiplier that either adjusts the base price up or down to account for specialty hospitals that have much higher or lower costs than the average. This is really only necessary if the national base rate is being used. If a hospital specific rate is being used, then this is really not necessary. If a peer group base rate is being used, then again this is not necessary as long as the peer groups are homogenous. What should be kept in mind is whether some hospitals should not be a part of the overall transition to a national base rate. If they are to be transitioned to a national base rate because it is easier/politically more palatable to have a single price, then the adjustment factor can be used to adjust the final price for certain types of hospitals (i.e., maternity, eye, heart, trauma etc.).

3. Budgeting simulations for the pilot hospitals + all the rest of the hospitals
    - Budgets for 2006 must be simulated as soon as possible according to a couple of different policy options. Simulating a few options at first is most appropriate so that those reviewing the information are not confused. Changing the parameters of the policy options can be done quickly and easily once the initial simulations are available for review.
    - The Case-Mix office can begin preparing simulations as soon as the relative weights are calculated and hospital budget information available.
4. Legislative paper regarding additional decisions required
5. Begin planning for next year's budget
6. Plan of how the Fund will present all of this information to the new govt.
7. Draft timeline
    - By the end of May 2005 all technical aspects of the DRG based financing system should be finalized, the Managing Board of the NHIF should recommend DRG based financing for 2006, and a presentation of the new system should be made to the existing Parliament before elections
    - From June – September 2005, results of the technical work and recommendations for 2006 should be presented to key members of the new government/Parliament, the Physicians Union, etc.

- The discussion with Dr. Kehayov focused on his impressions of his upcoming election/re-nomination as well as the general elections. Dr. Kehayov talked a lot about the upcoming Physician's Union Congress. He will reveal his plan/vision for the future then and will begin discussing it more publicly starting in May including sharing it with the new government during the summer and fall.
- The basic message we wanted to get across to Dr. Kehayov, which we've stated before is that the use of DRGs does not mean that the power of the Physician's Union will be diminished. We went through a list of policy issues/system parameters that the Physician's Union could and in some cases should have some input. These parameters were discussed with the case-mix team prior to

discussing them with Dr. Kehayov, and include things like reviewing and refining relative weights, base rates, the transition policy, and other system related issues.

- Jugna asked Dr. Kehayov what would happen if he could hold up DRGs as a tool that would facilitate the work that hospital managers need to do, bring more efficiency and clarity to what healthcare services are being provided; possibly resulting in a single financing agency (the NHIF), reducing administrative burden while giving hospital managers, physicians, etc. and providing more useful clinical and cost data. He did not respond directly but seemed to think about it and suggested that we meet in May after the Congress to discuss and his vision more directly.

- The meeting with Dr. Bukarev was very focused and productive meeting. We talked with about the likelihood of presenting simulated budgets based on DRGs to the Managing Board of the Fund, as suggested by Dr. Salchev. We also talked in general terms about the time line between now and May, the summer period, and the fall in terms of what can and cannot happen given the upcoming elections in June. Dr. Bukarev supported the idea of presenting actual simulated budgets to the Managing Board of the Fund in May. He said that he needs the Case-Mix Office to be ready with simulated budgets for the pilot hospitals. Dr. Bukarev asked a number of technical questions related to the quality of the clinical and cost data from the pilot hospitals, the ability to simulate budgets in the next few weeks, examples of the actual mechanism that would be used to contract budgets with each hospital, etc. It was clear from his questions that he was really thinking about what can be done in the next couple of months to set the stage for the future.
- Dr. Bukarev also explained that the current contracting model involves a lot of work since the Fund contracts for a certain number of CCPs with each hospital. The CCPs contracted are based on the capacity in terms of staff, equipment, technology, etc. of the hospitals. Knowing all of this information and contracting a specific number and type of CCPs will have to somehow be transformed to DRGs in terms of hospital contracting.
- We gave Dr. Bukarev an alternative approach that could be much simpler administratively. Instead of contracting for a certain number and type of DRGs, the Fund should contract with hospitals for a certain amount of money (i.e., the budget for a quarter or a year etc.) based on the previous year's experience of reported cases. The budget under DRGs accounts for the case-mix index of the hospital and the volume.
- The principle underlying this method is that on the front end, the Fund would not care or try to constrain the types of services hospitals are "eligible" to "produce" through the contracting mechanism. Instead, each hospital director would determine what services to produce based on ability of staff, appropriate equipment, efficiency, quality, etc. Deciding what services to provide really is the hospital's responsibility and using DRGs can create such an incentive.

- On the backend, meaning as data is submitted, the Fund and would group the data and review the output by creating some parameters in the database software to spot check the appropriateness of the reported cases per month to make sure that hospitals are not up-coding, artificially increasing volume (i.e., quicker and sicker), or "treating" patients that the hospital has no ability to treat (i.e., cardiology patients when no cardiology equipment or staff exist at the hospital). Monitoring hospitals is critical with any kind of financing system that creates incentives and disincentives related to patient care patterns and funding. The decision the Fund has to take is whether to monitor this behavior on the front end or the back end.
- Dr. Bukarev requested more technical assistance in the coming months in order to work through different budgeting simulation and contracting scenarios. He also suggested having a one or two day meeting to discuss all of the technical issues in a practical and concrete manner resulting in simulated budgets and other policy parameters in order to present the new financing system idea to others. Dr. Bukarev would like most of this work completed in April and May.

- MS. Shah had several meetings with members of the Case-Mix Team. The case-mix office has continued to work on all aspects of the technical implementation of a DRG-based financing system. Currently, the clinical data from all of the pilot hospitals is being grouped into DRGs. This output (DRG assigned to each patient) will be used to compute relative weights using patient level cost data from the pilot hospitals. As an exercise, the data from one hospital was used to calculate "Bulgarian" relative weights during this trip. These weights were compared to a set of German relative weights, and as a first pass, the results were promising in terms of the Bulgarian relative weights being consistent with the German set. Relative weights cannot be created from one hospital's cost data. However going through the exercise was useful for the case-mix office. They will take the grouped data from all of the pilot hospitals and create the first set of Bulgarian relative weights and then compare them to other weight sets. They will also compare the mix of DRGs produced by each hospital to determine if coding issues exist, if certain hospitals should be excluded from the DRG system, and if all of the data should be used for calculating relative weights.
- The case-mix office has not only continued to carry out a large number of tasks over the past several months, but has also continued to increase its capacity in terms of knowledge, staff, and dedication to the task at hand (i.e., implementing a DRG-based financing system) despite set-backs on the political landscape. For this, they are to be commended.

BULGARIA HEALTH REFORM PROJECT
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APRIL 2005 MONTHLY REPORT

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USAID HEALTH PROJECT SUMMARY AND REPORT

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April, 2005

Project Title:	Bulgaria Health Reform Project (BHR)
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Period of Performance:	April 30, 2003 – April 30, 2005
Project Manager:	Ibrahim Shehata

Progress, Accomplishments, Issues and Events

General

- BHRP requested a five months no-cost extension from USAID contracting officer. The request was submitted after discussing it with USAID's CTO. The main purpose of the extension is to have some time to work with the newly elected government following the June 25 national elections and ensure that the new government would continue to build on the work started by the project. This extension will enable our project team to ensure that the new government understand the work that has been accomplished thus far and further its sustainability. The project's assistance will build on its accomplishments and specifically:

  - Assist the National Health Insurance Fund and the new leadership at the Ministry of Health to draw up plans for national implementation of the new hospital financing scheme in 2006;
  - Bring the leadership, at the new government, up to date with the progress made by the project, particularly in the areas of hospital financing, hospital restructuring and institutionalizing national health accounts, and ensure that they build on that effort;
  - Assist the newly established National Health Accounts unit within the Ministry of Health to finalize their 2004 estimates. This is the first set of estimates developed by the Unit and they are likely to require some technical assistance with the analysis, which is due in September 2005.

- The project received approval from USAID contracting officer for the five months no cost extension on April 26.

- Dr. Antonia Pervanova, a member of the ruling party and member of the parliamentary health commission, and the deputy minister of finance, Mr. Lobomir Datsov, requested if BHRP COP can attend a meeting at the Ministry of Finance to discuss health reform issues. The meeting was also attended by the World Bank and the IMF representatives in Bulgaria. In the meeting, Dr. Parvanova revealed the results of a survey that was commissioned by the ruling party and went to talk about the party's health reform plan if they were reelected. She also asked if the Project, the World Bank and the IMF would be willing to sponsor a health reform conference for the party to discuss their health reform plan. After discussing the request with the CTO we decided to decline the invitation due to the proposed timing two months ahead of the national elections. However, we stated that we would be willing to participate in such a conference as a presenter if requested. We were later notified that the conference will take place on 12 May and were asked to present on the topic of hospital financing.
- Ibrahim Shehata met with the president of the Private Health Insurance Association, Dr. Mimi Vitkova, and told her that the idea of holding a symposium is likely postponed indefinitely due to the fact non of the desired speakers was able to commit to attending in such a short notice We agreed to discuss the idea again after the national elections and determine if it would be a good idea to hold the symposium later in the summer.

Hospital Financing

- Ibrahim Shehata met with the head of the NHIF's case mix office Dr. Yavor Drenski to discuss activities for the remaining months of the Project's life. They outlined the remaining tasks that were later presented during a meeting with the NHIF's director, Dr. Bukarev. During the meeting with Dr. Bukarev, we agreed that it would be beneficial to present the RHIF and the MOH an update on the progress made thus far and present results of the initial grouping of patient cases into the Australian grouper. The key tasks outlined for action are:

  - Complete grouping of all pilot hospital data into DRGs
  - Divide the pilot hospitals into Peer groups (use peer groups that the government will accept, has used before, etc.)
  - Review the DRGs generated by each hospital and by each peer group and determine whether each hospital as well as each peer group, is representative of the norm (meaning is the hospital and the peer group producing a wide mix of DRGs vs. just a few DRGs in one MDC or specialty area); this information will help guide the use of different base rates, adjustment factors etc.
  - Using the grouped data, calculate a set of Bulgarian weights using data from ALL pilot hospitals (use statistical trimming methods to remove patient records with costs that are either too low or too high)
  - Complete the evaluation of cost data submitted by each hospital and determine if the cost data from any hospitals should be removed completely

from the relative weight calculation database and then recalculate the relative weights

- Compare various relative weight sets including the following:
  - Relative weights calculated form ALL pilot hospitals
  - Relative weights calculated with some pilot hospitals' data removed
  - German relative weights
  - Australian relative weights
  - Romanian relative weights
  - Others as appropriate

- Calculate the case-mix index (CMI) for each hospital using the relative weights and the cases grouped into DRGs
- Calculate the following base rates:
  - Hospital base rate: using data submitted from the pilot hospitals
  - Peer base rate: using data submitted from the hospitals, grouped into peers
  - National base rate: one single base rate using all of the data submitted from the pilot hospitals in aggregate

- Select policy parameters to use in simulating hospital budgets
  - Select set of relative weight(s) to use in budget simulations
  - Determine if outliers will be modeled/paid
  - Determine if a risk corridor will be used
  - Select an inflation factor if one will be used to adjust the base rates
  - Select other adjustment factors if appropriate (i.e., specialty hospital)
  - Think about which base rate(s) to model

- Select policy parameters to use in simulating hospital budgets
  - Hospital budget = CMI x cases x hospital base rate adjusted for inflation for 2006 (basically the budge neutral option)
  - Hospital budget = CMI x cases x peer group base rate adjusted for inflation for 2006 (some risk; minimal if the peer groups are homogeneous)
  - Hospital budget = CMI x cases x national base rate adjusted for inflation for 2006 (more risk)
  - Hospital budget = CMI x cases x (A% of the peer group base rate adjusted for inflation + B% of the national base rate adjusted for inflation) (less risk than 100% of the national rate depending on what A is vs. B)

- Identify other issues the NHIF will have to address
  - Types of service not covered by DRGs
  - Costs included vs. excluded from the DRG base rate
  - Financing mechanism, contracting model, etc.

BULGARIA HEALTH REFORM PROJECT
Contract № PCE – I – 00 – 00 – 00014 – 00
Task Order 810

MAY 2005 MONTHLY REPORT

Prepared for:
USAID Bulgaria

Prepared by:

BearingPoint, Inc.
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USAID HEALTH PROJECT SUMMARY AND REPORT

Monthly Report No. 21

May, 2005

Project Title:	Bulgaria Health Reform Project (BHR)
Contractor:	BearingPoint, Inc.
Contract Number:	PCE-I-00-00-00014-00
Task Order:	810
Period of Performance:	April 30, 2003 – September 30, 2005
Project Manager:	Ibrahim Shehata

Progress, Accomplishments, Issues and Events

General

- Hopsital financing advisor, Jugna Shah arrived in Sofia on a TDY for the period May 6-14. The purpose of her visit are:

  - Prepare, together with the case mix office team, the technical parameters that are the basis for creating budget simulations;
  - Create budget simulations;
  - Review the Bulgarian relative weights based on cost data collected from all pilot hospitals;
  - Compare Bulgarian with other countries relative weights; and
  - Participate in a workshop on the DRG technical issues targeted to the Regional Health Insurance Funds (RHIFs) and the NHIF's board of directors.

- A one-day conference on health reform issues was organized by the ruling political party. The purpose of the party was to present the party's health reform agenda. Jugna Shah and Ibrahim Shehata were invited to present on the work done under the USAID Health Reform Project on the topics of inpatient care financing and hospital restructuring.

- BHRP's COP was invited to attend a two-day retreat in Troyan for USAID's Economic Growth team. The retreat was also attended by other USAUD partners and was an opportunity to inform other partners of the project's activities and look for synergies among the different programs.

- Ibrahim Shehata attended a presentation by Study of Democracy and Cooalition 2001. The topic of the presentations and discussion was on corruption in the health care sector.
- As a follow up on a previous meeting with the COP of the Open Government Initiative, Ms. May-Jay Abbit, Ibrahim Shehata arranged a meeting with the deputy minister of health for Ms. Abbit to present about the project's Initiative's goal and what they would like to accomplish within the MOH.
- Ibrahim Shehata met with Dr. Emil Raynov, the health care advisor to the leader of the social party. This was the third meeting with Dr. Raynov with the objective of briefing him on the work done by the Project.

National Health Accounts

- Ms. Finka Denkova, from the National Statistics Institute contacted Ibrahim Shehata to arrange a meeting with members of the NHA team at the MOH to go over the classification of different government health expenditure. Ms. Denkova wanted to get the technical assistance on some specifics estimates that were provided by the Ministry of Health and Ministry of Finance. She also debriefed on the progress made for finalizing the 2003 NHA estimates.

Hospital Financing

- Jugna Shah and Ibrahim Shehata met with the head of the case mix office, Dr. Yavor Drenski, and his team to go over the plan for the DRG workshop scheduled on May 10. Invited to the workshop will be all directors of the RHIFs, The Director of the NHIF, members of the management board for the NHIF, the minister of health and his deputy.
- Following that meeting, another meeting with the NHIF director took place in his office to go over the final plans for the workshop and finalize the discussion topics. The main goal of the workshop is:

  - To discuss the technical issues and take concrete decisions about all technical components of the NHIF using a DRG-based budgeting system to finance "X" number of hospitals starting in 2006
  - To create a concrete list of what Dr. Bukarev needs for his presentation to the Managing Board of the NHIF (i.e., budget simulations – which hospitals, selection of parameters, etc.)
  - Other issues that need to be discussed (i.e., grouper, software/hardware/etc.)

- We agreed that all participants need to approach this working and decision-making meeting from a technical perspective – which means that we need to keep political issues that are not relevant to the technical discussion separate, otherwise we might get stuck on issues that we cannot impact or know for sure about resulting in not getting the technical work at hand completed.

➢ The key topics that the workshop is to discuss will specifically include:

- Review the Bulgarian relative weights calculated by the Case Mix office and others.
- Review, discuss and revise policy parameters related to draft budget simulations prepared by the case mix office for pilot hospitals in 2006
- Take concrete decisions on the following in order to simulate hospital budgets:
    - Base rate/base price/blending options
    - Relative weights to use in the simulations
    - Budget value from 2005 (from MOH, NHIF, combined, etc.)
    - Risk corridor options
    - Adjustment factor options
    - Outlier policy options

- Select policy parameters to use in simulating hospital budgets for 2006 for the pilot hospitals and the rest of the hospitals
    - Hospital budget = CMI * cases * hospital base rate adjusted for inflation for 2006 (budget neutral option)
    - Hospital budget = CMI * cases * peer group base rate adjusted for inflation for 2006 (some risk; minimal if peer groups are homogeneous)
    - Hospital budget = CMI * cases * national base rate adjusted for inflation for 2006 (more risk)
    - Hospital budget = CMI * cases * (A% of the peer group base rate adjusted for inflation + B% of the national base rate adjusted for inflation). (this is less risk than 100% of the national rate depending on what A is vs. B)

- Review other issues that require legislative changes (i.e. types of services not covered by DRGs)
- Discuss how the NHIF will contract budgets with hospitals in 2006
    - Contracting actual DRGs, like CCPs today or different mechanism
    - Contracting future budgets using historical budgets adjusted for case mix index and readjusted for actual case mix on regular basis
    - Data reporting, evaluation, payment process, monitoring for compliance
    - Front-end monitoring vs. back-end monitoring in the contracting process

- Outline what the information is needed to present to the Managing Board.

POSSIBLE MODELS FOR HOSPITAL FINANCING USING CASE-MIX AND DRG

Case-mix office, NHIF

HOSPITAL
BUDGET = # of equivalent * CMI * base rate
cases

HOSPITAL BUDGETING BASED ON DRGs.KEY ELEMENTS

- Relative Weights
- Case-Mix Index (CMI)
- Equivalent Cases
- Base rate

CASE-MIX INDEX (CMI)

CMI for Hospital A =

$$\frac{\sum \text{(relative weights x \# of equivalent cases)}}{\text{Total number of equivalent cases}}$$

- Indicator of the types of cases treated and resource consumption
- Hospitals that treat more complex cases have a higher CMI
- Hospitals with a higher CMI receive a larger budget

EQUIVALENT CASES

Equivalent cases – transform cases with a very long or vey short stay to standard cases.

Standard case – a DRG case whose stay in the hospitals falls within the upper and lower trim point of hospital stay defined for the DRG in question.

TRANSFORMING A LONG STAY CASE INTO A STANDARD CASE

Example:

- Patient 1 from DRG "X" stayed for 24 days
- The upper trim point of LOS for DRG "X" = 18 days
- ALOS for DRG "X" = 10 days

$$1.0 + \{0.6 \times \frac{\text{(\# of days above the upper trim point)}}{\text{ALOS}}\}$$

$$1.0 + \{.6 \times 6/10\} = \mathbf{1.36}$$

- Patient 1 from DRG "X" uses up more resources than a typical case for that group and is equivalent to more than "1" standard case

TRANSFORMING A SHORT STAY CASE INTO A STANDARD CASE

Example:

- Patient 2 from DRG "X" stayed for 2 days
- The lower trim point of LOS for DRG "X" = 3 days
- ALOS for DRG "X" = 10 days

$$\frac{\text{\# of days of stay}}{\text{ALOS}} = \frac{2}{10} = \mathbf{0.2}$$

- Patient 2 from DRG "X" is equivalent to only 1/5 of the standard case for that group in terms of resource consumption

TRANSFORMING A CASE REFERRED TO ANOTHER HOSPITAL INTO A STANDARD CASEЙ

Example :

- Patient 3 from DRG “X” stayed for 4 days
- The upper trim point of LOS for DRG “X” = 18 days
- ALOS for DRG “X” = 10 days

$$\frac{\text{\# of days of stay}}{\text{ALOS}}$$

4 days/ 10 days = 0.**4**

- Patient 3 from DRG “X” has a different status because he was referred to another hospital. It is believed that he used up less resources than required for treating a standard case for that group.

BASE RATE

Base rate – represents the costs of treating an average case

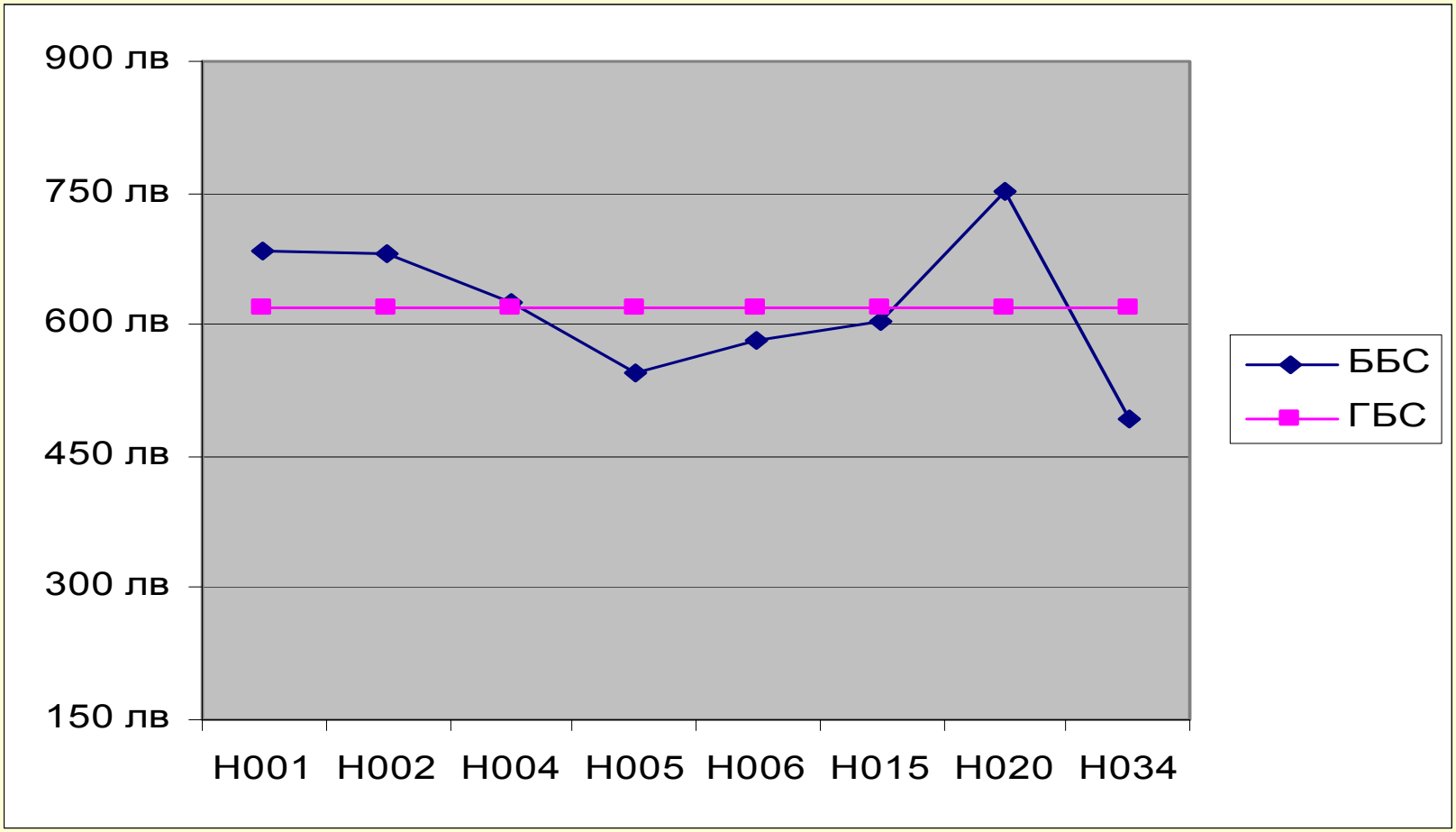
It can be estimated:

- nationally
- regionally
- for peer groups
- for individual hospitals

ADDITIONAL FACTORS THAT IMPACT HOSPITAL BUDGETING

- **Risk factor adjusters** – for the type of hospital, for location, for population groups served
- **Other factors** – beyond the hospital's control that should be considered with regard to costs (e.g. inflation)
- **Neutrality coefficient/budget regulation** – financial risk reduction

HOSPITAL BASE RATES COMPARED TO PEER GROUP BASE RATE



DRAFTING A HOSPITAL BUDGET. OPTIONS

Option 1 – Use a *hospital's (individual) base rate* in the first year and gradually switch to a peer group (national base rate)

Option 2 – Use a *blended base rate* – estimated as a certain percentage between hospital base rate and peer group base rate (e.g. 90/10) and gradually switch to a peer group (national base rate)

DRAFTING A HOSPITAL BUDGET USING A HOSPITAL BASE RATE

Advantages

- No financial risk for the hospitals
- Opportunity for hospitals to improve the quality of coding and reporting of data without this influencing their financial status
- More gradual migration

Disadvantages

- Hospitals will not experience the effect of the new approach to financing and the incentives it provides for efficient resource utilization

DRAFTING A HOSPITAL BUDGET USING A BLENDED BASE RATE

Advantages

- Approximating the major goals of the new payment scheme – equal treatment and fair resource allocation
- Hospitals aim to come close to the average level of costs in the peer group
- Possibility for a better appreciation of the effect of the new approach to payment

Disadvantages

- Higher financial risk for the hospitals

HOSPITAL BUDGETS USING DIFFERENT BASE RATES

Hospital	Equivalent cases	2004 expenditures (BGN)	CMI	Hospital base rate	Peer group base rate	Budget using hospital base rate	Budget using blended base rate HBR/PBR=90/10
1	9 680	5 140 754	0,7916	671	729	5 140 754	5 171 021
2	16 063	11 795 037	0,9850	745	729	11 795 037	11 736 578
3	12 157	7 552 241	0,9110	682	729	7 552 241	7 583 462
4	4 628	3 426 526	0,9050	818	729	3 426 526	3 379 878
5	12 272	6 445 961	0,7812	672	662	6 445 961	6 418 308
6	16 003	8 191 204	0,8147	628	662	8 191 204	8 212 516
7	22 445	13 330 994	0,9079	654	662	13 330 994	13 310 181
8	17 186	8 242 002	0,8467	566	662	8 242 002	8 358 042
9	14 611	7 559 223	0,7159	723	662	7 559 223	7 475 129
10	34 103	21 434 210	0,7965	789	662	21 434 210	21 030 955
11	30 888	15 819 797	0,8115	631	662	15 819 797	15 853 419
12	15 904	9 173 351	0,9183	628	662	9 173 351	9 197 466
13	5 925	3 111 075	0,7950	660	575	3 111 075	3 062 364

HOSPITAL BUDGETS USING DIFFERENT BASE RATES

Hospital	Equivalent cases	2004 expenditures (BGN)	CMI	Hospital base rate	Peer group base rate	Budget using hospital base rate	Budget using blended base rate HBR/PBR=90/10
14	6 488	2 496 459	0,7912	486	575	2 496 459	2 534 984
15	2 800	1 175 918	0,7245	580	575	1 175 918	1 171 737
16	3 293	1 237 898	0,6881	546	575	1 237 898	1 240 974
17	8 303	3 973 229	0,7161	668	575	3 973 229	3 907 009
18	3 392	1 305 118	0,7191	535	575	1 305 118	1 311 242
19	11 319	5 231 251	0,7022	658	575	5 231 251	5 150 935
20	4 945	1 777 220	0,7065	509	575	1 777 220	1 795 429
21	1 991	746 020	0,7076	530	575	746 020	750 355
22	29 731	26 781 312	1,1545	780	893	26 781 312	27 093 598
23	17 941	17 078 247	1,0064	946	893	17 078 247	16 936 078
24	40 325	35 706 088	0,9586	924	893	35 706 088	35 489 499
25	11 983	10 088 531	0,9115	924	893	10 088 531	10 027 391
26	4 186	5 255 219	1,2598	997	915	5 255 219	5 197 883

HOSPITAL BUDGETS USING DIFFERENT BASE RATES

Hospital	Equivalent cases	2004 expenditures (BGN)	CMI	Hospital base rate	Peer group base rate	Budget using hospital base rate	Budget using blended base rate HBR/PBR=90/10
27	5 334	7 813 557	1,1545	1 269	915	7 813 557	7 574 768
28	4 265	3 869 651	1,0653	852	915	3 869 651	3 887 690
29	5 476	43 438 407	10,5443	752	915	43 438 407	44 255 722
30	14 568	6 688 241	0,5772	795	915	6 688 241	6 770 129
TOTAL	388 205	295 884 741				295 884 741	295 884 741

HOSPITAL BUDGETS USING BLENDED BASE RATE

Hospital	Equivalent cases	2004 expenditures (BGN)	CMI	Hospital base rate	Peer group base rate	Budget using hospital base rate	Difference	Difference (%)
1	9 680	5 140 754	0,7916	671	729	5 171 021	30 267	0,59%
2	16 063	11 795 037	0,9850	745	729	11 736 578	-58 459	-0,50%
3	12 157	7 552 241	0,9110	682	729	7 583 462	31 221	0,41%
4	4 628	3 426 526	0,9050	818	729	3 379 878	-46 648	-1,36%
5	12 272	6 445 961	0,7812	672	662	6 418 308	-27 653	-0,43%
6	16 003	8 191 204	0,8147	628	662	8 212 516	21 312	0,26%
7	22 445	13 330 994	0,9079	654	662	13 310 181	-20 813	-0,16%
8	17 186	8 242 002	0,8467	566	662	8 358 042	116 041	1,41%
9	14 611	7 559 223	0,7159	723	662	7 475 129	-84 094	-1,11%
10	34 103	21 434 210	0,7965	789	662	21 030 955	-403 255	-1,88%
11	30 888	15 819 797	0,8115	631	662	15 853 419	33 622	0,21%
12	15 904	9 173 351	0,9183	628	662	9 197 466	24 115	0,26%
13	5 925	3 111 075	0,7950	660	575	3 062 364	-48 710	-1,57%

HOSPITAL BUDGETS USING BLENDED BASE RATE

Hospital	Equivalent cases	2004 expenditures (BGN)	CMI	Hospital base rate	Peer group base rate	Budget using hospital base rate	Difference	Difference (%)
14	6 488	2 496 459	0,7912	486	575	2 534 984	38 525	1,54%
15	2 800	1 175 918	0,7245	580	575	1 171 737	-4 180	-0,36%
16	3 293	1 237 898	0,6881	546	575	1 240 974	3 076	0,25%
17	8 303	3 973 229	0,7161	668	575	3 907 009	-66 221	-1,67%
18	3 392	1 305 118	0,7191	535	575	1 311 242	6 124	0,47%
19	11 319	5 231 251	0,7022	658	575	5 150 935	-80 316	-1,54%
20	4 945	1 777 220	0,7065	509	575	1 795 429	18 209	1,02%
21	1 991	746 020	0,7076	530	575	750 355	4 335	0,58%
22	29 731	26 781 312	1,1545	780	893	27 093 598	312 286	1,17%
23	17 941	17 078 247	1,0064	946	893	16 936 078	-142 169	-0,83%
24	40 325	35 706 088	0,9586	924	893	35 489 499	-216 589	-0,61%
25	11 983	10 088 531	0,9115	924	893	10 027 391	-61 141	-0,61%
26	4 186	5 255 219	1,2598	997	915	5 197 883	-57 336	-1,09%

HOSPITAL BUDGETS USING BLENDED BASE RATE

Hospital	Equivalent cases	2004 expenditures (BGN)	CMI	Hospital base rate	Peer group base rate	Budget using hospital base rate	Difference	Difference (%)
27	5 334	7 813 557	1,1545	1 269	915	7 574 768	-238 789	-3,06%
28	4 265	3 869 651	1,0653	852	915	3 887 690	18 039	0,47%
29	5 476	43 438 407	10,5443	752	915	44 255 722	817 315	1,88%
30	14 568	6 688 241	0,5772	795	915	6 770 129	81 888	1,22%

DRAFTING A BUDGET FOR HOSPITAL A
Using a hospital base rate

Indicators for first 6 months of 2004	Reported # of cases	# of equivalent cases
Standards cases	15 342	15 342
Cases with long stay	389	622,79
Cases with short stay	173	35,24
Referred cases	0	0
Total	15 904	16 000
Expenditures (2004)		*9 173 351 .*

DRAFTING A BUDGET FOR HOSPITAL A
Using a hospital base rate

# of cases a year (projected)	15 904
# of equivalent cases a year (projected)	16 000

Equivalent case AVERAGE COST	(2004)	573,33 .
CMI	(2004)	0,9183
HOSPITAL BASE RATE	(2004)	624,34 .
PEER GROUP BASE RATE	(2004)	662,00 .
BLENDED BASE RATE (%)	(2005)	*0,00%*
Hospital base rate		*100,00%*
National base rate		*0,00%*
INCREASE (adjustment for hospital type, location, etc.)		*1,00*
HOSPITAL BASE PRICE	(2005)	624,34 .
ANTICIPATED NUMBER OF CASES	(1,00)	16 000
CMI	(2005)	0,9183
INITIAL HOSPITAL BUDGET	(2005)	9 173 351 .
Budget neutral coefficient	(2005)	*1.000*
HOSPITAL BUDGET ADJUSTED	(2005)	9 173 351 .
HOSPITAL BASE PRICE ADJUSTED	(2005)	624,34 .

DRAFTING A BUDGET FOR HOSPITAL A
Using a blended base rate

# of cases a year (projected)	15 904
# of equivalent cases a year (projected)	16 000

Equivalent case AVERAGE COST	(2004)	573,33 .
CMI	(2004)	0,9183
HOSPITAL BASE RATE	(2004)	624,34 .
PEER GROUP BASE RATE	(2004)	662,00 .
BLENDED BASE RATE (%)	(2005)	*0,00%*
Hospital base rate		*90,00%*
National base rate		*10,00%*
INCREASE (adjustment for hospital type, location, etc.)		*1,00*
HOSPITAL BASE PRICE	(2005)	628,06 .
ANTICIPATED NUMBER OF CASES	(1,00)	16 000
CMI	(2005)	0,9183
INITIAL HOSPITAL BUDGET	(2005)	9 197 466 .
Budget neutral coefficient	(2005)	*1.000*
HOSPITAL BUDGET ADJUSTED	(2005)	9 197 466 .
HOSPITAL BASE PRICE ADJUSTED	(2005)	628,06 .

HOSPITAL BUDGETS' REGULATION

1. **Neutral budgets** – preserve initial hospital budgets regardless of the change in the number and composition of cases during the current year

2. **Risk corridor** – risk may vary within certain limits (e.g. +/- 5%)

3. **Base rate adjustment** at national level *(provided that a blended or peer group/national base rate is used)*

HOSPITAL PAYMENT MECHANISM
FLEXIBLE BUDGET

- Determine initial budget for hospitals based on the number of DRG cases anticipated and the hospital (or blended) base rate
- *Option 1* – paying a proportion of the budget (1/12) at the end of each month
- *Option 2* - paying a differentiated price per DRG case for the services reported during the month
- Quarterly (semi-annual) adjustment using risk corridors or updating the peer group base rate at national level

MAJOR ISSUES RELATED TO DRG FINANCING

- ✓ **Relative weights** – Bulgarian, borrowed, combined
- ✓ **Base rate** – hospital, peer group, national, blended
- ✓ **Incorporated costs** – costs to be accounted for in calculating the base rate
- ✓ **Equivalent cases** – paying a higher/lower price for outliers
- ✓ **Migration period** – use a hospital (blended) base rate and gradually switch to a peer group (national) base rate

BULGARIA HEALTH REFORM PROJECT
Contract № PCE – I – 00 – 00 – 00014 – 00
Task Order 810

JUNE 2005 MONTHLY REPORT

Prepared for:
USAID Bulgaria

Prepared by:

BearingPoint, Inc.
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Sofia, Bulgaria

USAID HEALTH PROJECT SUMMARY AND REPORT

Monthly Report No. 22

June, 2005

Project Title:	Bulgaria Health Reform Project (BHR)
Contractor:	BearingPoint, Inc.
Contract Number:	PCE-I-00-00-00014-00
Task Order:	810
Period of Performance:	April 30, 2003 – September 30, 2005
Project Manager:	Ibrahim Shehata

Progress, Accomplishments, Issues and Events

General

- National elections took place on June 25 with the socialist gaining the most votes but without wining an outright majority. This will mean that the social party will have to initiate coalition talks with other parties. The impact of the elections outcome on the performance of the BHRP will depend on how quickly it will take to form a government particularly since most decision makers will be relauctant to discuss any specific issues during the negotiation process.
- Ibrahim Shehata met with Dr. Petko Salshev to discuss the impact of the elections on the health reforms. Dr. Salshev agreed to assist with introducing our project to the MOH new leadership once it is named.

Hospital Financing

- Dr. Yavor Drenski, from the NHIF's Case Mix Office and Assia Toumbanova, the task coordinator for the hospital financing activity, traveled to Istanbul June 17-19 to meet with Jeremy Cumpston from TC Health, the Australian company that supplied the NHIF with thye DRG grouper, and Ms. Jugna Shah, the Project's hospital financing advisor. Both Jugna and Jeremy were in Ankara on another project and agreed to fly to Istanbul to meet Dr. Drenski and Assia. Also attending the meeting was Dean Prokopov and Valko Kalinkin, from Gamma Consult, who is responsible for developing the hospitals' financial system software under the World Bank's project. The purpose of thye meeting was to:

    - Clarify and resolve technical problems – software setup, underlying logic of data entry and storage

- Draft an action plan and timeline for the joint efforts
- Discuss and agree on each party's commitments pertaining to the action plan
- Provide definitions for AR-DRG V4.2 and discuss issues related to the definitions content
- Review the software features related to financial management at hospital level and in the case mix office.
- Discuss the peculiarities that resulted from the changes to the coding.

➢ Ms. Shah moderated the meeting. Dr. Drenski gave a short summary of the DRG project and the progress made. He outlined the following problems:

- Selection of the procedure coding system – that can be bound to the grouper section
- The miscoding/ errors with the procedures and the case-mix need to get the definitions of the ICD 10 AM
- Grouper software selection – has to be considered with respect to the procedure coding system
- The expired Deed of Confidentiality with the Common Wealth of Australia – the Deed has to be extended in terms of using the purchased by the Health project Australian grouper for the purposes of the NHIF case-mix office
- Can the Case-Mix Office extend the AR DRG license for evaluation to January 1 2006
- Since the Australian grouper is one of the possible groupers to be selected and purchased by the Bulgarian government (after the evaluation is complete), there are specific issues that will require clarification: Price for the AR DRG v. 4.2 with copyrights, does has to be adopted for financing, and signing contracts
- Can Bulgaria purchase only the logic of the AR DRG?

➢ Jeremy Cumpston answered to the questions raised. It is very important to extend the terms of the Deed with the Common Wealth of Australia before resetting "the clock" through the end of 2005. He promised to coordinate the quicker respond form the Australian site regarding the Deed.

➢ Ms. Toumnbanova added to the background information that Bulgaria is in a pre-election situation and it is unrealistic to expect the decision-makers to come up with a decision regarding the procedures and the groupers during the next few months. The case mix office needs to be ready any time to present result on the grouping whenever they are requested. There was a lot of work done to start using the AR DRG thanks to the Gamma Consult that adopted the hospital software to the grouper engine. Dr. Drenski said that the case mix office staff manually

adapted several mapping table in order to be suitable to the Australian coding system. Jeremy agreed that it is positive to extend the evaluation through the end of the year.

- The Australian Government owns the property rights on the logic and so far they have a package price for the AR DRG and the ICD 10 AM procedures. Jeremy promised to check if it is possible to be purchase only the AR DRG. Dr. Drenski added that after the evaluation is completed and the decision is made there should be a tender procedure for vendors. He asked how many companies have the right to sell the AR DRG. Jeremy answered that there are four companies. Purchasing the grouper will require signing an agreement between the Australian and the Bulgarian government.
- TC Health gave to Dr. Drenski the requested procedure definitions.

BULGARIA HEALTH REFORM PROJECT
Contract № PCE – I – 00 – 00 – 00014 – 00
Task Order 810

JULY/AUGUST 2005 MONTHLY REPORT

Prepared for:
USAID Bulgaria

Prepared by:

BearingPoint, Inc.
74-A Bouzloudja St.
Sofia, Bulgaria

USAID HEALTH PROJECT SUMMARY AND REPORT

Monthly Report No. 23

July/August, 2005

Project Title:	Bulgaria Health Reform Project (BHR)
Contractor:	BearingPoint, Inc.
Contract Number:	PCE-I-00-00-00014-00
Task Order:	810
Period of Performance:	April 30, 2003 – September 30, 2005
Project Manager:	Ibrahim Shehata

Progress, Accomplishments, Issues and Events

General

- The July and August monthly reports are combined due to the fact that activities have slowed down considerably during most of that period due to the ongoing negotiations between the different political parties on forming a coalition government. In addition, many of the technical staff at the NHIF and MOH had used that opportunity to take their annual summer holidays.
- After nearly two months of political haggling a coalition government was finally confirmed on August 18 which included the two parties from the incumbent government plus the Social party which won the majority of the votes in the June national elections. The new minister of health is Dr. Radoslav Gaidarski. A change in all the leadership is likely to take place some time in September. However, one new deputy was named, Dr. Emil Raynov, who the project has debriefed in a number of occasions on its activities.
- Ibrahim Shehata attended the National Health Accounts Symposium and the 5th congress of the International Health Economics Association (iHEA) in Barcelona on July 7-13. He used the occasion to present Bulgaria's efforts with introducing DRGs as basis for hospital financing. The conference was also attended by the director of the NHIF, Dr. Ivan Bukarev.
- BHRP COP met with the new deputy minister of health Dr. Emil Raynov. Although we had the chance to meet Dr. Raynov before, this was the first meeting in his new formal position following the formation of the new government. The purpose of the meeting was to introduce to him all the activities the project was involved in over the past two years, particularly in the areas of hospital financing, hospital restructuring and national health accounts. We also provided him with copies of the main reports and documents generated by the project. The discussion eventually touched on the issue of the number of pilot hospitals that should be using the DRG system as basis for financing in 2006. Dr. Raynov's

initial reaction was that this will now have to discussed among all the coalition partners of the new government, which is not an easy task according to him. Ibrahim Shehata reminded him that the previous government, which is now a key partner in the new coalition, has played a big role with the initiation of the hospital financing reform project and it would be very unlikely that they would be the ones opposing. We also stressed that majority of the technical work has all been done and that the technical capacity at the Case Mix Office of the NHIF is such that they are ready for implementation of the new financing scheme. At the end of the meeting we agreed to meet at least on more time before the project ends.

Hospital Financing

- The NHIF's director, Dr. Ivan Bukarev, issued an internal order for creating a working group from all the NHIF department directors to produce a document on the readiness of the NHIF to start with the DRGs as basis for financing starting on January 2006.
- During a meeting with Dr. Bukarev and Dr. Drenski, from the Case-Mix Office, the question came up as to who will take the final decision. Dr. Bukarev said that he would like to have all the necessary documents ready to sign for who eber is named as new minister once a new government is confirmed. Dr. Bukarev reiterated his position that CCPs are creating a lot of problems and the money for the inpatient care are not well distributed. The NHIF wants to use the risk corridors as a method to calm any fears from the hospitals that would be getting much less money once DRGs are implemented. The case mix office was requested to prepare a DRG readiness report that Dr. Bukarev wanted to present to the NHIF's amanagement board during their meeting at the end of August. Attached as annex is the documents that where prepared by the case mix office with assistance from the BHRP.
- In a subsequent meeting with Dr. Drenski to assist with preparing the documents that the NHIF's director asked for he revealed that only half of all hospitals will be provided with hardware under the World Bank project.

ANNEX 1

HOSPITAL REPORTING AND PAYMENT USING CASE-MIX AND DRG

I. Reporting

Currently, hospitals report their activity at the beginning of the month following the one reported. For this purpose the NHIF has provided a free software product which generates two files: with clinical and cost data that describe overall hospital activity during the last month as well as the actual expenditures incurred in relation to health care delivery. Therefore, the hospital accountant and coders should follow strictly the reporting rules for which they were trained in the second half of 2004. The process of reporting has two stages:

1. Test mode
2. Final mode

Test mode – during this stage hospitals submits to the Case-mix Office of the NHIF the clinical report (diagnoses made, procedures performed, patient passport data, team of physicians, etc.). The file received is then entered in the grouper and patient records are distributed to the relevant DRG. Potentially (due to a miscoded diagnosis or procedure, unacceptable final/leading diagnosis, incompatibility between diagnosis/procedure and gender), some patient records may be grouped in the so called error DRG or identified as ungroupable. The file the NHIF Case-mix office sends back to the hospital within 24 hours after receiving the test report contains such error records. The hospital makes the required correction and resends the report file to the Case-mix Office. This procedure enables the hospital to receive the maximum reimbursement amount for the services provided. The exchange of test files might take as long as it is necessary in order to have all errors corrected. However, with regard to the timeframe for reporting and reimbursement within one month, the file should not be sent more than 3 times. The file name identifies that it is meant for testing.

Final mode – the hospital sends two final files with clinical and cost data. The patient records included in the clinical data may not be corrected any more. The Case-mix Office sends back a file with the final DRG assignment and the diagnoses for which the hospital will not be reimbursed. Based on this file, the hospital generates the invoice and specification for payment by the RHIF. The latter also receives a draft specification for the respective hospital from the Case-mix Office and after comparing the two it proceeds with payment. Once the Data Warehouse is set up, the process of sending a draft specification to the RHIF will be optimized and each RHIF will be able to check the reports of hospitals within its region in the database, compare them and review the specification and invoice submitted.

II. Payment

A major goal of DRG implementation is to assure equity of hospital financing, i.e., payment should be determined by the actual case-mix. Therefore, in estimating DRG prices and hospital budgets, a *national base rate* or *peer group base rate* should be used with regard to the specificity of the different types of hospitals. If hospitals are reimbursed using their *individual base rate*, they will receive a budget that is equal to their own costs. In a brand new system it would be more appropriate to use a blended base rate (estimated as a certain ratio between the hospital's own base rate and the peer group or national base rate) for the first several years and gradually transition to using peer group or national base rate.

Mixed Approach

Hospitals are paid according to DRG prices but there is a budget ceiling applied:

- **DRG-based budgeting** – an initial budget is estimated for each hospital based on the activity projected in view of the activity reported for the preceding year. The volume of services and the cost of service unit are based on the case-mix (composition of cases as per DRG). Hospitals' individual case mix indexes (CMI) are calculated. A hospital budget is estimated by multiplying the expected number of cases times the CMI and the base rate. Additional risk-adjusters that can be considered include inflation, location, specific conditions, etc. Based on the hospital's CMI and number of discharges for the previous year, the hospital budgets' ceilings are negotiated with inpatient care providers annually and by 6 months/quarter (equal to ¼ or ½ of the annual budget agreed upon.
- **Payment by DRG prices** – for each case reported hospitals receive differentiated DRG prices estimated by multiplying the relative weight of the respective DRG times the national base rate. Every 6 months the reimbursements made for the services reported are reconciled against the hospital budget ceiling for the 6-month period. DRG prices and hospital CMI can be estimated using different sets of relative weights depending on the grouper selected: AR-DRG or IR-DRG. It is also possible to borrow foreign relative weights (Australian or American respectively, or from other countries that use either of these classification systems.) or Bulgarian relative weights can be calculated on the basis of the patient level cost data from pilot hospitals, as well as, use a combination of the above. The aim is to develop Bulgarian relative weights which will reflect to a great extent local practice of medicine and cost structure.

Budget Regulation Mechanisms

Essential for the successful implementation of DRGs as a payment tool for acute inpatient care is the usage of mechanisms of control and budget regulation. They ensure financial protection of hospitals from potential losses. On the other hand, these mechanisms decrease the financial risk to be borne by the payer with regard to artificial increase of the rate of admissions and raising the hospital CMI.

- **Risk corridors**

The range of risk is set within certain limits (+/- 5% of the pre-defined hospital budgets). Thus it is guaranteed that hospitals' gains or losses will not exceed the range of risk estimated.

- **National base rate correction**

This mechanism is applied if DRG prices and hospital budgets are estimated using a blended or peer group (national) base rate. The national base rate is adjusted at the end of the period reported based on the number of DRG cases actually reported by all hospitals.

Problems

1. Problematic cases in terms of financing are those which require aftercare and long-term care whose LOS is beyond the limit for the respective diagnoses (the limit is set on the basis of expert judgment of ALOS), e.g.:
   - TB
   - psychiatric cases (in case they are funded though the NHIF)
   - cases requiring rehabilitation, etc.

   In order to ensure adequate reward of hospitals that have such cases, payment by DRG is made for the days up to the upper limit of the LOS under the DRG plus payment for the beddays beyond that limit for a certain period of time.

2. Hospitals' outpatients are also grouped with the same software but they are assigned a special set of relative weights (at a much lower value than for inpatients).

III. Clinical algorithms under DRG

DRG clinical algorithms are used only when hospitals are paid using the case-mix approach and DRG. In view of transitioning to a new method of financing and reporting, which does not use CCP as a payment tool, CCPs should be amended in terms of structure and scope. In order to discontinue the vicious practice of physicians trying to report cases with diagnoses covered by more expensive CCPs (by reporting a diagnosis or procedure which may depart from the actual one), it is sensible to develop clinical algorithms which cover larger patient groups (i.e. more DRGs). Clinical algorithms may be developed for diseases affecting a part of a whole system of organs or procedure by including patients with similar clinical developments but different resource consumption (i.e. assigned to different DRGs.

1. Large thoracic surgical interventions

2. Intersticiary Интерстициални pulmonary diseases

3. Complex colonoscopy including those with a one-day stay

4. Gastrointestinal hemorrhage

5. Hepatobiliar diagnostic procedures

The requirements related to admission indicators, pre-admission minimum and daily algorithms of care which are incorporated in CCPs and guarantee quality are preserved. The availability of equipment and staff credentials will be determined by the DRG/DRGs and will remain as a negotiation tool. When a patient is admitted to hospital, the clinical algorithm of care will be defined without knowing the precise amount of money which will be paid (different DRGs – different values). The reimbursement to be received for the patient will be estimated after data have been processed and the case grouped in the appropriate DRG. For cases in unclear condition whose clinical algorithm is hard to determine immediately, a document will be developed in which the physician will report all services provided following a certain sequence. Subsequently, when the diagnosis has been set, this document will be attached to the relevant clinical algorithm for the respective diseases and will become an integral part of it.

IV. Negotiations

Two major types of negotiations may be outlined:

i) **Framework negotiation with the Physician Union and the Dentist Union** – possible areas to be negotiated include:

- ✓ the ratio of peer group base rate and individual base rate (e.g. 90% hospital's own base rate + 10 % peer group base rate, etc.;)
- ✓ the set of relative weights (including those for outpatients) – Bulgarian, borrowed (subject to a procedure for purchasing them) or a combination;
- ✓ the risk corridors for estimating hospital budgets;
- ✓ mechanisms and methodology for adjusting DRG prices;
- ✓ clinical algorithms under DRG.

ii) **Negotiations with hospitals** regarding medical and IT equipment or capacity to perform the services required under DRGs or groups of DRGs. The hospital budget for the current year as well as its quarterly allocations will be subject of negotiation.

ANNEX 2

National DRG Implementation Strategy

The introduction of the case-mix approach and DRGs as a method of hospital payment was addressed in the Protocol for dividing the tasks for gradual replacement of the hospital financing system in Bulgaria signed by the MoH and the NHIF. According to the Timeline (Roadmap) of the Protocol, DRGs as a method of financing were to be introduced in 2006 when **the system will go live for all hospitals**.

The following steps should be taken in order to ensure successful implementation in all hospitals:

1 Appoint a working group within the NHIF headquarters which should determine the series of actions required for the preparation of the inpatient care sector until the end of 2005.
2 The Working Group should draft an Action Plan until the end of 2005 (Timeline) identifying the necessary steps and the timeframe for their implementation, along with the unit within the NHIF headquarters responsible.
3 Content of the Action Plan (Timeline) with terms for executing the following steps (Appendix 1):

I. Drafting legislation

1. Ordinance on AR-DRG implementation;

Draft the legal document for introducing a classification system for reporting and financing hospitals which have a contract with the NHIF.

2. National Framework Contract (NFC) and appendices (Appendix 2);

Draft language related to negotiating, reporting and reimbursing NHIF contractual partners included in the NFC general and special sections.

- ✓ *Terms and conditions for concluding contracts for inpatient health and inpatient dental care;*
- ✓ *Documents required and terms for concluding contracts for inpatient health and inpatient dental care;*
- ✓ *Terms and conditions for inpatient care delivery;*
- ✓ *Documentation and document flow of reporting requirements for inpatient care providers;*
- ✓ *Reporting requirements for NHIF contractual partners ;*
- ✓ *Quality and control;*

Draft an appendix containing the major requirements of the classification system.

Draft a sample contract to be concluded with contractual partners.

3. Payment mechanism;

Develop a comprehensive mechanism for reimbursing hospitals for the services provided to inpatients and outpatients based on AR-DRG. An inherent part of the payment mechanism are the so called risk corridors, a tool which guarantees the financial sustainability of the NHIF and its contractual partners. Based on that, estimate the hospital budgets on national and facility level.

4. Control mechanism;

The control mechanisms will be enforced when hospital reports contain data pointing at a potential violation of the NFC.

5. Introduce a national system for coding procedures;

Currently, only a coding system for diagnoses, ICD-10, has been implemented nationwide. ICD-9-CM for coding procedures has been used unofficially.

6. Enter into an agreement with the Australian Government for acquiring the full rights for using AR-DRG;

The contract for the full rights over the DRG classification system should be finalized and signed. Full rights ownership will eventually enable the NHIF to modify the system by adding new groups and/or delete existing ones.

7. Clinical algorithms and contractual requirements associated with DRG.

Develop the structure of a document containing NHIF special requirements for contracting based on DRG and the relevant appendix to the NFC (Appendix 3).

Develop the structure of clinical algorithms based on DRG and the relevant appendix to the NFC

II. Virtual hospital financing

- ✓ Test the system's technical capacity;

In order to minimize possible errors associated with the new reporting and financing system, it is necessary to test the full cycle of reporting, correcting and generating the final draft to be used as a basis for reimbursement.

- ✓ Prepare the budgets of all hospitals that have a contract with the NHIF in order to determine the draft budget of inpatient care in Bulgaria;

Based on data from the pilot hospitals and cost data from all hospitals for the previous year, a national draft budget for inpatient care should be estimated as well as preliminary budgets for all contractual partners to be used in negotiating.

III. Hardware procurement to NHIF case-mix office (a server with appropriate capacity to collect and store hospital data, access to the internet)

The availability of hardware for processing the data reported is essential for the success of the system as a whole. Currently, the case-mix office has hardware capacity to process pilot hospitals' data only.

IV. Software procurement to hospitals

- ✓ Draft and circulate a letter among all contractual partners in view of preparation for installing the software product;

In order to make sure that software installation will have been completed by the end of 2005, all contractual partners should make sure the hardware and networks are operational.

- ✓ Verify the preparedness to install the software (availability of hardware, networks, reporting activity organization, human resources);

Given the tight timeline, hospitals commitment in response to the letter sent by the NHIF will ensure the rigorous organization required with regard to the preparation for DRG implementation.

- ✓ Install the software module for reporting service delivery;
- ✓ Train hospital staff that will use the software;
- ✓ Train system administrators from NHIF/RHIF;

V. Training

- ✓ Coders and supervisors from hospitals;

In order to elaborate on the training on coding using ICD-10/9-CM delivered in the second half of 2004 and in view of improving coding quality, it is necessary to organize another round of training for key hospital staff involved in reporting, i.e., coder and supervising physician.

- ✓ Bulgarian Physician Union (BPU);

As a party in the negotiation of the NFC, the representatives of the BPU should be very knowledgeable about the overall process of reporting and financing inpatient care using case-mix and DRG.

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- ✓ *Quality and control;*

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Draft a sample contract to be concluded with contractual partners.

3. Payment mechanism;
Develop a comprehensive mechanism for reimbursing hospitals for the services provided to inpatients and outpatients based on AR-DRG. An inherent part of the payment mechanism are the so called risk corridors, a tool which guarantees the financial sustainability of the NHIF and its contractual partners. Based on that, estimate the hospital budgets on national and facility level.

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The control mechanisms will be enforced when hospital reports contain data pointing at a potential violation of the NFC.

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Based on data from the pilot hospitals and cost data from all hospitals for the previous year, a national draft budget for inpatient care should be estimated as well as preliminary budgets for all contractual partners to be used in negotiating.

III. Hardware procurement to NHIF case-mix office (a server with appropriate capacity to collect and store hospital data, access to the internet)

The availability of hardware for processing the data reported is essential for the success of the system as a whole. Currently, the case-mix office has hardware capacity to process pilot hospitals' data only.

IV. Software procurement to hospitals

- ✓ Draft and circulate a letter among all contractual partners in view of preparation for installing the software product;

In order to make sure that software installation will have been completed by the end of 2005, all contractual partners should make sure the hardware and networks are operational.

- ✓ Verify the preparedness to install the software (availability of hardware, networks, reporting activity organization, human resources);

Given the tight timeline, hospitals commitment in response to the letter sent by the NHIF will ensure the rigorous organization required with regard to the preparation for DRG implementation.

- ✓ Install the software module for reporting service delivery;
- ✓ Train hospital staff that will use the software;
- ✓ Train system administrators from NHIF/RHIF;

V. Training

- ✓ Coders and supervisors from hospitals;

In order to elaborate on the training on coding using ICD-10/9-CM delivered in the second half of 2004 and in view of improving coding quality, it is necessary to organize another round of training for key hospital staff involved in reporting, i.e., coder and supervising physician.

- ✓ Bulgarian Physician Union (BPU);

As a party in the negotiation of the NFC, the representatives of the BPU should be very knowledgeable about the overall process of reporting and financing inpatient care using case-mix and DRG.

IMPLEMENTATION OF DRG AS A HOSPITAL PAYMENT TOOL

OVERVIEW

AR-DRG is a system for grouping cases in 661 manageable groups. Each DRG covers diseases with similar clinical characteristics and approximately identical costs of care. The system has been designed for the purpose of financing health care services and distributing available resources in a fair manner. Currently, this method is widely used in contracting and funding inpatient care.

The DRG system classifies patients based on factors which predominantly reflect the differences in resourse requirements e.g.: leading diagnosis, type of surgical procedure, complications and co-morbidities (CC), age, gender, health status at discharge. These components play a decisive role in resource consumption in the course of treatment.

One of the main goals in implementing DRG is to ensure fair treatment of hospitals, i.e., differences in financing will depend entirely on the hospital's case-mix.

DRG financing may be implemented using two major approaches – payment by DRG price per case or through hospital budgets estimated using DRGs. It is also possible to use a combination of the two approaches.

The following parameters are used to estimate hospital budgets:

- *The **case-mix index (CMI)*** – provides information on the type of cases treated and resource consumption. The more severe the cases a hospital has treated, the higher its CMI. Hospitals with a very high CMI receive a larger budget.
- *The **Base rate –*** represents the cost per average case. It can be calculated **nationally** (total allocations to inpatient care in the country divided by the total number of DRG cases); **regionally** (total allocations to inpatient care in the region divided by the total number of DRG cases treated in the region); **for a peer group of hospitals** (the expenditures of the hospitals from a given peer group divided by the total number of DRG cases treated in the peer group of hospitals) and **at hospital level** (the expenditures of a given hospital divided by the total number of DRG cases treated there).
- ***Relative weight of a DRG –*** characterizes the weight of given group compared to the remaining groups or ratio of resources consumed for the treatment of cases from this group against the average cost per case.

The budget of a hospital is estimated by multiplying the projected number of cases times the CMI and the base rate.

The DRG price is calculated by multiplying the relative weight of the given DRG times the national base rate.

INTERNATIONAL EXPERIENCE USING DRG

The concept of DRGs emerged at the end of the 1960s in US in a period of time marked by escalating hospital expenditures and various efforts to harness them. A way out of this

situation was actively sought whose aim was to allow cost containment without reducing the volume or quality of services provided. A team of experts from Yale University proposed the DRG approach for measuring and financing hospital production.

International experience has indicated DRG implementation can resolve important problems of inpatient care, e.g., rising expenditures, compromised quality and poor hospital productivity. Presently, DRGs are **successfully used for hospital financing** in a number of countries around the world: US, Portugal, Ireland, Denmark, Australia, Austria, Belgium, Brazil, Canada, Norway, Hungary, France, Singapore, Taiwan, Switzerland, Sweden, Germany, Romania, etc. In other countries DRGs are still implemented as a **pilot**: (UK for financing 2005-2006), Slovenia, Japan, and Estonia.

PREREQUISITES FOR DRG IMPLEMENTATION

A software product for reporting (compiling) data on hospital activity – it has *at least three modules* (registration, coding and calculation) and allows coding cases (discharges), registering the expenditures of all types of units and calculating them at patient level.

Hardware equipment – a certain minimum number of workstations depending on the number of discharges.

Training hospital directors/managers and chief accountants on DRG as a method for reporting and reimbursing hospital activity as well as on the preparation required for its implementation.

Training hospital information units' staff on coding morbidity. Based on the leading (final) diagnosis and on the procedure performed (surgical or therapeutic), the grouper (the specialized software for patient record classification) allocates patients to a surgical or therapeutic DRG. Grouping cases by DRG is impacted also by the existence of complications or co-morbidities, the patient's age, weight (for newborns) and health status at discharge. Accurate and comprehensive coding determines the DRG in which a patient record (an electronic record containing all data related to the episode of care) will be grouped and, hence, guarantees reimbursement of the expenditures incurred.

PROBLEMS ENCOUNTERED IN OTHER COUNTRIES

Theoretical studies and international experience have proved that DRG is the most suitable method for hospital financing, as it complies to a great deal with the criteria for equity and productivity and to some extent with the criteria for controlling costs and for patient satisfaction (see Table 1). In order to offset potential drawbacks of this payment tool (e.g. unreasonable increase of admissions and reduced quality), a **combination of DRGs and a global budget** is applied. According to this method, hospitals are paid under DRG prices with an "initial budget" set for each of them. An additional mechanism for enhancing the combined method comprises risk corridors (a lower and an upper limit of the budget) which guarantee that hospital revenues may not fall under or exceed the respective lower and upper limit of the predetermined initial budgets. This approach ensures financial protection of health care providers, on the one hand, and reduces the financial risk of the payer, on the other. Clinical algorithms under DRG (Clinical Care Pathways) may be used for quality assurance and raising customer satisfaction.

Table 1. Comparison between the major hospital payment methods

Goals / Payment mehtod	Equity/ universal approach	Control over costs	Productivity / Effectiveness	Patient satisfaction with the service
Fee for service	3	1	3	5
Case-based payment	4	3–4	4	2
DRG	5 (highest)	2	5	3
Per bed day	1-2	3-4	2	4
Global budget	1-1	5	1	1

Source: Dov Chernichovsky, PH.D.
Georgetown University, Washington D.C

The Bulgarian experience with public funding of hospitals involves purchasing services of the same nature and significance using different, often hybrid payment tools positioned somewhere between payment per case, DRG and fee for service without meeting the requirements of any of the above methods in their pure form.

The financing provided by the MoH is based on administratively estimated average cost (quasi-prices) using:

- Case by classes (and sub-classes) of diseases +
- Certain types of procedures (e.g. dialysis, transplantations, intensive care, etc.)
- Cost containing regressive mechanism of payment in the event of increased admissions

The problems associated with the reasonable performance of quasi-market relations and competition among hospitals include: the low level of reimbursement of hospital costs (generating deficit); the exclusion of private facilities from public funding; the use of highly aggregated and resource inhomogeneous cost units (classes of diseases) for costing and, hence, misalignment between reimbursement rates and the actual hospital product; absence of admission indications (leading to overadmission) and a lack of quality assurance criteria, etc.

The funding provided by the NHIF is based on average prices (quasi-prices) agreed with the Physician Union and Dentist Union of:

- Case under CCP (which cover one or more diagnoses and conditions) +
- Very expensive medical supplies (valves, stents, cochlear implants, etc.) +
- High technology inpatient care procedures.

The NHIF may also apply a price adjustment mechanism in the event of overspending or no execution of a hospital's budget.

The hospital payment method used by the NHIF has led to the following problems: different level of reimbursing hospital costs (CCP prices are agreed upon based on "expert judgment" as a result of which some are very profitable while others generate deficit); absence of resource homogeneity in over 90% of CCPs (not accounting for CC, age, and other factors that impact cost); absence of sufficiently reliable mechanisms for controlling costs (the price adjustment mechanism is applied subject of professional organizations' consent).

The funding provided through and by municipal budgets is based on financial norms (for dispensaries) determined administratively by the MoF and on an additional subsidy estimated by municipal councils.

In summary, the merit of public financing of inpatient care in the past two years is the introduction of performance-based payment/subsidy (prevailingly per case) and not paying for existing physical capacity. This has resulted in closing hospital beds, reducing LOS and utilization indicators of acute hospitals approximating the average values in Europe. Remuneration of hospital staff has also improved.

The defects of the current payment system include: 1. three different payment tools are used none of which adequately covering hospital costs; 2. public funds allocated to inpatient care are by far insufficient and lead to unreasonable rates (not covering expenditures), they only generate more liabilities and losses; 3. the system gives room for fraudulent reporting, substantial manipulation and distortion of health statistics in favor of more profitable CCPs; 4. there is a tendency of discriminating patients whose diagnoses are not covered by CCPs and require cheaper treatment; 5. the different payment tools require different reporting mechanisms which increases hospitals' administrative burden; 6. costing is very subjective; 7. the hypertrophy of public funding has led to overfunding certain very expensive procedures and supplies for a small number of consumers and insufficient allocations for prevention, health promotion and outpatient care which often can substitute costly inpatient care; 8. the fact that costing was based on the average costs of all hospitals led to overfinancing and higher remuneration in municipal hospitals and extraordinary deficit and low pay of physicians working in larger facilities and teaching hospitals where the more severe and complicated cases are treated.

PREPAREDNESS OF NHIF

Pertaining to the Protocol signed by the MoH and the NHIF in 2003, DRG-based financing of inpatient care by the NHIF should start on January 1, 2006.

As a result of its consistent actions since 2001, the NHIF has built the technical capacity required for changing the payment tool for inpatient care and for adopting the case-mix approach and DRG. The following steps have been made for the successful implementation of DRG in Bulgaria:

- ✓ train all hospitals' managers on their role in the DRG system;
- ✓ provide basic training to coders from all hospitals in coding morbidity and procedures;

- ✓ present the method of cost allocation and costing hospital products and services for the purposes of the new system of financing to accountants from all hospitals;
- ✓ procure hardware and softare required for implementaion to 154 hospitals under a WB project;
- ✓ create a patient records database from 38 hospitals (currently, 818,906 patient records processed);
- ✓ calculate costs per case (in total for the episode of care and by cost centers, i.e., hospital structural units);
- ✓ estimate relative weights (based on pilot hospitals' actual costs);
- ✓ test information flows between pilot hospitals and the payer (NHIF Case-mix Office) – electronic reporting and processing;

At this stage DRGs can be implemented provided that the following conditions are met:

- ✓ legal regulation of introducing DRG as a method of hospital payment and reporting;
- ✓ draft the section of the National Framework Contract related to inpatient care and negotiate it with the Physician Union and Dentist Union;
- ✓ provide the software needed or organize in some other manner electronic reporting of the hospitals which were not included in the WB project for sofware procurement referred to above;
- ✓ purchase a *grouper* in order to implement DRG nationwide.

ADVANTAGES, PROBLEMS AND SOLUTIONS

The advantages of DRG-based financing compared to the currently used CCPs are:

- A classification system covering all patients (i.e. inpatient care as a whole) in a manageable number of clinically relevant and resource homogeneous groups based on the overall episode of inpatient care;
- The assigning of DRGs is based on factors that are decisive in terms of differences in resource requirements e.g. leading diagnosis, type of surgical procedure, CC, age, gender, health status at discharge unlike CCPs which take into account only the diagnosis and the procedure;
- DRGs are a more sophisticated and precise method of measuring and costing hospital products which on its part is essential for performing the responsibilities associated with forecasts, management and financing;

The resource homogeneity of DRGs ensures adequate payment for health care services while CCPs have only a certain extent of clinical homogeneity which does not guarantee adequate reimbursement of expenditures.

- DRGs guarantee efficient and fair allocation of resources among hospitals in line with the complexity of the cases treated;

Equity among hospital is achieved on both national and regional level. DRGs' relative weights ensure fair distribution of funds across DRGs and the diagnoses covered unlike CCPs which have led to two extremes – overfinancing of certain diseases and insufficient financing of others. CCPs do not give any possibility of relating hospital payment to the case mix.

- DRGs make inpatient care more transparent and facilitate analyses and comparisons between hospitals;

The database containing clinical and cost data at patient level and the grouping of cases in isoresource DRGs enables benchmark studies (research of the best and most efficient practice

of care for a certain disease) nationwide as well as within a peer group of hospitals. CCPs, being inhomogeneous in terms of resource consumption cannot serve as an adequate and representative basis for analyses and comparisons.

- DRGs create incentives for cost containment, efficient resource utilization, cost management and improvement of hospital productivity;

The distribution of all patients to a manageable number of groups (complying with their resource homogeneity) discourages hospitals to look for ways to allocate patients in an "artificial" (more profitable) manner, i.e. the DRG system carries the message that "accurate reporting brings adequate reimbursements" (provided that controlling mechanisms are in place and functioning well).

- DRG alleviates reporting done by hospitals;

Automated generating of reports, along with electronic reporting, considerably reduces hospitals' administrative burden, on the one hand, and manual processing done by health institutions.

- In long term it can be expected that hospital restructuring will take place naturally, closing down economically unsustainable and unattractive hospitals, some of which will partially or completely change their designation and convert into other types of curative, health or social facilities.

Anticipated problems with DRG implementation:

- Unreasonable increase of admissions – DRG-based payment encourages hospitals to admit more patients in order to increase revenue, if hospital activity is not monitored adequately;

This fundamental defect has been observed in most countries using DRGs. The trend of overadmission has been present in Bulgaria for the past several years due to the use of essentially different payment methods (CCP and an average cost per diagnosis). Therefore, hospitals' capacity in that regard may be considered exhausted to a large extent.

- Reporting non-existing CC ("DRG creep") which raises the hospital's CMI, if hospital activity is not monitored adequately

Immediately after implementing DRGs, hospitals will improve the quality of coding (i.e. accurate reporting of CC). Currently, there is no such incentive as coding is not fully used for payment. At a later stage, however, there will be attempts to report non-existing CC in order to gain revenues despite the fact that the logic of grouping cases by DRGs does not account for co-morbidities not having any direct impact on resource consumption in the provision of care for a certain disease. Such practice can be prevented by introducing a coding monitoring procedure simultaneously with DRG implementation.

In order to avoid overadmissions and upcoding, global hospital budgets may be introduced in combination with case-based payment under DRG. Thus, hospitals will not be encouraged to unreasonably increase admissions or the severity of cases treated.

- Incentives for cost containment on the part of the hospitals may lead to compromising quality – discharge patients in unstable condition, if hospital activity is not monitored adequately;

This drawback may be overcome if DRGs are used as a cost unit for financing while clinical algorithms (CCPs) with predetermined activities are applied as a quality assurance tool.

- The system of DRGs requires the availability of a sufficient number of facilities for aftercare and long-term care where patients can be referred to in post-acute stage.

In conclusion, when case-based payment under DRG is applied in combination with a global budget, along with clinical algorithms (CCPs) for quality assurance, a number of advantages can be observed in comparison with the existing system for the 3 major actors:

- **For the public and the payer** – based on accurate reporting it will be possible to conduct objective costing of hospital production, estimates of the actual resource consumption; the in-built mechanisms for regulation do not allow unreasonable spending of funding, i.e., they guarantee the sustainability of the payer and, hence, of inpatient care as a whole; it provides a solid basis for restructuring the health sector; the case-mix approach and DRGs supply a large volume of data which can be used for quality management.
- **For hospital managers** – the DRG system is a powerful tool in the hands of hospital managers which enables them to assess efficiency of various hospital units as well as of the facility as a whole and make comparisons with similar hospitals (benchmarking); it provides reliable and reasonable evaluation for hospital restructuring;
- **For patients** – patients will no longer be divided into diagnoses covered by CCPs and others, which will improve physicians' attitude and respectively the way they deliver health care services; the control over DRGs and the application of clinical algorithms will restrict corruption and will ensure better quality and comprehensiveness of required activities which will improve the level of patient satisfaction with inpatient care.